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ABSTRACT

The three papers in this document cover issues related to labor force analysis and educational investment in developing countries. They present an overview of the present situation, advocate the replacement of a dominant technique by a well-structured planning process, and suggest the wide range of analytic approaches available and necessary if labor force analysis is to be improved within this process. The introductory chapter discusses the economic approach to the analysis of education's contribution to social welfare objectives, summarizes governments' rationales to justify educational expansion, examines the debate concerning the appropriate technique to appraise educational projects from a labor force development perspective, and introduces the perspective the other two authors develop further. Chapter 2 argues that the effective management and planning of the labor force development sector is conditional on the existence of a centralized coordinating agency involved in a continuous planning process plus the increased use of cost-effectiveness analysis. The basic concern of chapter 3 is the formulation of more appropriate labor force planning activities, given a conception of labor market operation. Discussion follows of the labor market characteristics of high, middle, and low skill levels in the public and private sectors and of various types of analyses seen as most appropriate for increasing labor market efficiency. (YLB)

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Manpower Issues in Educational Investment

A Consideration of Planning Processes and Techniques

George Psacharopoulos
Keith Hinchliffe
Christopher Dougherty
Robinson Hollister

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George Psacharopoulos is education research adviser in the Education Department of the World Bank; Keith Hinchliffe, Christopher Dougherty (lecturer in economics, London School of Economics), and Robinson Hollister (professor of economics, Swarthmore College) are consultants to the Education Department.

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Abstract

This collection of papers discusses a number of issues related to manpower analysis and educational investment in developing countries. Much of the debate in this area over the last two decades has centered on the related merits of the manpower requirements forecasting and rate of return approaches. While the theoretical weaknesses of manpower forecasting have been widely discussed and ex-post evaluations have revealed substantial forecasting errors, this methodology still dominates government manpower planning agencies and development assistance agencies. The authors of this volume suggest a broader approach to the analysis of the relationship between manpower and the educational system. It is contended that forcing all manpower questions into any single analytical framework will result in low quality analysis and low quality educational investments. Consequently, the use of a wide range of techniques is advocated and discussed. A second aspect of the argument advanced in this volume is the need for continuity of manpower analysis through the development of a planning process which goes well beyond the identification and preparation of a specific education project. Such a continuous framework for analysis and policymaking, it is suggested, can be provided through the construction and repetition of an "annual routine" to be performed by a government planning unit. Such a routine consists of specific tasks designed to continually monitor conditions in the labor market so as to provide a regular set of relevant signals to a wide range of decision-makers in the education and training sector.

These papers do not provide a new blueprint for manpower analysis. They take stock of the present situation, advocate the replacement of a dominant technique by a well structured planning process and begin to suggest the wide range of analytic approaches available and necessary if manpower analysis is to be improved within this process.

Abstrait

La présente série d'études traite de divers aspects analytiques de la main-d'oeuvre et des investissements dans l'éducation dans les pays en développement. Ces vingt dernières années, les débats ont porté essentiellement sur les avantages respectifs des approches fondées sur la prévision des besoins de main-d'oeuvre et le taux de rentabilité. Bien que les faiblesses théoriques des prévisions de main-d'oeuvre aient été largement soulignées et que les évaluations rétrospectives aient révélé d'importantes erreurs de prévision, cette approche est encore la plus utilisée par les services officiels de planification de la main-d'oeuvre et les organismes d'aide au développement. Les auteurs du présent document suggèrent d'analyser dans une perspective plus large les relations entre la main-d'oeuvre et le système d'éducation. Ils affirment qu'à vouloir étudier toutes les questions de main-d'oeuvre dans un cadre unique quel qu'il soit, on obtient forcément une analyse et des investissements dans l'éducation de qualité médiocre. Aussi recommandent-ils d'utiliser toute une gamme de techniques. Ils soulignent aussi la nécessité d'assurer la continuité de l'analyse en mettant au point un processus de planification allant bien au-delà de l'identification et de la préparation d'un projet d'éducation donné. Pour ce cadre d'analyse et de prise de décision, les auteurs suggèrent la définition de "tâches annuelles" à confier à un service officiel de planification. Il s'agira de tâches spécifiques visant à contrôler continuellement la situation sur le marché du travail de manière à donner régulièrement les signaux appropriés à un grand nombre de décideurs dans le secteur de l'éducation et de la formation.

Ces études ne proposent pas un nouveau schéma d'analyse de la main-d'oeuvre. Les auteurs font le point de la situation, recommandent de remplacer la technique actuellement la plus utilisée par un processus de planification structuré et laissent entrevoir le vaste éventail de méthodes analytiques disponibles, qu'il est indispensable d'adopter si l'on veut que ce processus permette d'améliorer l'analyse de la main-d'oeuvre.

Extracto

En la colección de documentos que aquí se presenta se estudian varias cuestiones relacionadas con el análisis de los recursos humanos y las inversiones para educación en los países en desarrollo. Gran parte del debate sostenido en esta esfera durante los dos últimos decenios se ha centrado en los méritos conexos de los enfoques para pronosticar las necesidades de recursos humanos y para evaluar la tasa de rentabilidad. Aunque las deficiencias teóricas de los pronósticos sobre recursos humanos han sido examinadas extensamente y las evaluaciones ex post han revelado errores de cálculo considerables, esta metodología predomina aún en los organismos oficiales de planificación de la educación y en las instituciones de asistencia para el desarrollo. Los autores del presente volumen sugieren un enfoque más amplio para el análisis de las relaciones entre los recursos humanos y el sistema educacional. Sostienen que la consideración de todas las cuestiones relativas a los recursos humanos dentro de un solo marco analítico dará por resultado análisis deficientes e inversiones educacionales de baja calidad. En consecuencia, se propugna y analiza una amplia gama de técnicas. El segundo aspecto del argumento presentado en el volumen es la necesidad de asegurar la continuidad del análisis de los recursos humanos mediante la elaboración de un proceso de planificación que vaya mucho más allá de la identificación y preparación de un determinado proyecto de educación. Se sugiere que el marco continuo para los análisis y la adopción de políticas puede obtenerse elaborando y estableciendo una "rutina anual" que ha de estar a cargo de una dependencia de planificación gubernamental. Dicho proceso rutinario consiste en una serie de tareas específicas encaminadas a examinar de manera continua la situación del mercado laboral a fin de proporcionar regularmente un conjunto de indicadores pertinentes a la amplia gama de funcionarios responsables de adoptar las decisiones en el sector de la educación y la capacitación.

En estos documentos no se presenta un nuevo patrón para el análisis de los recursos humanos. En ellos se evalúa la situación actual, se recomienda reemplazar la técnica predominante por un proceso de planificación bien estructurado y se empieza a insinuar la gran variedad de métodos analíticos disponibles y necesarios a fin de mejorar el análisis de los recursos humanos dentro de ese proceso.

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I. FROM PLANNING TECHNIQUE TO PLANNING PROCESS

George Psacharopoulos and Keith Hinchliffe

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1. INTRODUCTION

The development of alternative planning methodologies for educational projects occurred in the 1960's and the, often acrimonious, debate over them has taken place continuously since then in the academic literature. This debate has concentrated particularly on the relative merits of manpower forecasting and rate of return analysis. It is, perhaps, inevitable that when practitioners witness the recurring and repetitive controversies waged by advocates of competing analytical approaches a cynical attitude develops towards all forms of analysis. This, to some extent, has occurred in the field of manpower planning, and particulary in the developing countries. The experience of development agencies and government manpower development bodies suggests that the amount of economic and labor market analysis relating to education projects is limited and that that which is made generally utilizes a single format applied in a casual way. Furthermore, it appears that while the criticisms of that format - manpower forecasting - have been widely accepted by education planners, the latter have no faith in suggested alternatives such as rate of return analysis. At the same time, however, it remains the case that planners continue to operate under the requirement to provide an economic/manpower justification for education projects.

The papers included in this volume begin from the perspective that the search for a single methodology with which to approach all manpower issues is self defeating and that the concentration on planning techniques should be at least complemented by a concentration on the planning process. In

addition, it is argued that if the claims of, and expectations from, manpower planning were reduced the actual results could be increased. 1/

This introductory chapter basically sets the scene for the detailed chapters by Dougherty and Hollister by

- discussing in a formal, generalised way the economic approach to the analysis of education's contribution to social welfare objectives,
- summarising the rationales which governments have explicitly used in practice to justify educational expansion over the last twenty years - one of which has been manpower development-and the changing emphasis between these criteria,
- focusing, briefly, on the debate concerning the appropriate technique to appraise educational projects from a manpower development perspective,
- and, finally, introducing the perspective which is developed further by the other authors that the formulation of a planning process which stresses adequate information, consistency in decisionmaking, an explicit framework for choice, cost comparisons, a wide range of planning techniques and a discipline imposed by a planning process rather than by a planning technique might now be the appropriate step forward for manpower development planning.

1/ While in general the authors would maintain that much of their argument is also relevant for evaluating manpower development and educational policies in industrialized countries, this position is not followed through in these papers. While not being aware of any recent breakthrough or improvements in labor market forcasting in these countries which could potentially be incorporated into developing countries' planning efforts, it cannot be said for certain that they have not occurred. If they have, this would be a subject matter for another study beyond the scope of this volume.

2. A GENERALISED FRAMEWORK FOR THE ECONOMIC ANALYSIS OF OBJECTIVES OF EDUCATION PROJECTS

Several disciplines have come to be associated with the study of education and have relevance for planning decisions. Among them are sociology, psychology, statistics, philosophy and economics. In the area of educational planning, economists have forced themselves into ascendancy in the last two decades, particularly in developing countries. An important reason for this is the potentially systematic and rigorous framework for the analysis of several components of the planning process which economists have claimed can be provided by them.

In a general planning framework, the overall objective is to maximise social welfare. This, in turn, is regarded as having a number of components, each of which can be assigned different weights according to the view taken of their respective importance. Components of the welfare (or objective) function may, for instance, be economic production and distributive equity. This choice of components is the result of a normative (subjective) decision as is the next step of applying weights to the components to reflect whether or not, and to what extent, it is judged that an increase in production is more important for social welfare than an increase in equality. Finally, the educational planner needs to specify how each of the components can be affected by changes in policy variables in the educational system. One set of variables affecting gross national product could be school enrollments in the different schooling levels. To incorporate these into the function then requires a further set of weights to indicate the extent to which changes in

enrollments affect economic output. Two points should be added. These weights can be empirically derived from studies of the economic contribution of schooling, and the effects of enrollment expansion on income distribution can also be incorporated in the function in a similar way.

The discussion above covers a very formal framework. Even if such a framework is not explicit, however, the thought processes behind it, including the derivation of weights, are useful and can be used to attempt to systematize the analysis of educational projects directed to a wide range of objectives. These objectives include disseminating and inculcating a sense of national identity and a shared set of values, increasing the quality and achievement levels in schooling, reducing school failure and dropout rates, increasing and equalising access to schooling among class, regional, ethnic and racial groups, and so on. How a specific educational program affects one of these, how that then influences one of the social welfare components and how that in turn influences social welfare itself are questions which the modelling approach outlined above in its expanded form attempts to answer.

Another perspective on the way in which economists have viewed issues of educational policy is through their traditional concern with <u>efficiency</u>. This has led to an interest in comparing the value of resources used in a given program with the additional resources made available as a result of the program, in documenting the effects on educational achievement of a given program of educational expenditure, and in comparing the economic costs of various approaches aimed at a similar objective. A way of classifying these interests has been through the use of the terms <u>internal efficiency</u> and <u>external efficiency</u>. Internal efficiency considerations center on input - output relationships <u>within</u> the educational system. That is, they are concerned with analysing the effects of both school and non-school (eg. family

background) variables on educational achievement and on the impact which increases or changes in school related variables may have (eg. increased provision of textbooks). External efficiency concerns link up different levels of educational achievement of graduates with their consequent experience, most commonly in the labor market. The ways of assessing thi experience and, hence, of judging the external efficiency of schooling has formed much of the basis for the controversies within the economics of education over the last two decades.

3. RATIONALES IN EDUCATIONAL PLANS

It is instructive to move from the formal framework of the economic analysis of education projects to the actual justifications which have been made for educational expansion in developing countries' national plans. A survey and categorisation of these justifications has recently been made by Lewin, Little and Colclough (1982), based on 29 plans from 16 countries throughout Africa, Asia and Latin America and covering the planning period from 1965 to 1985.

Five sets of objectives for educational development were identified:

a) Manpower development. Here, the objectives were stated at very different levels of specificity from general statements that the future expansion of the economy required a more highly educated labor force to the specific enumeration of occupational requirements.

b) Increased social equity. Equity rationales tend to focus on increasing the access of particular regional, ethnic or racial groups to educational opportunities. This rationale is closely related to arguments that education is a human right and is expressed most strongly in the case of primary and lower

secondary schooling. In countries with significant ethnic or racial diversity, however, the desire to widen access of particular groups to higher levels of education has also been a determinant of policy. Few plans go beyond focusing on these groupings to explicitly formulate expansionary programs for relatively deprived social classes.

c) Nationbuilding. The important role which education can play in developing a shared national identity among the youth is another frequently used rationale for expansion. This is expressed most openly in those countries which have a diversity of peoples but variants of this rationale are also expressed in countries which are consciously attempting to consolidate or change the ideological orientation of the population. In such countries, the socialisation of students with a shared set of values and attitudes contributing to political stability and economic development is regarded as an important aspect of the educational system. This expansionary rationale is again concentrated mainly on primary schooling.

d) Increased educational quality. Increased expenditures on education and changes in educational policy have on occasions been directed towards an increase in quality rather than quantity. Policies to gear curricula towards more national concerns, to transfer control over examinations away from ex-colonial powers, to upgrade teachers and improve other school resources and to increase the research and planning capacity of the Ministry of Education all come within this category.

e) Improved efficiency Finally, plans have focused on the improved use of existing resources and the organisation of schooling to reduce wastage and increase the total number of graduates from the system.

After categorising the expansionary rationales in this way, Lewin, Little and Colclough then argue that trends over time in the importance of each of these can be identified. Perhaps most important in the context of our discussion is that all the plans reviewed included a stress on manpower development. The manpower development arguments however have continued to focus on the formal wage sector with little emphasis on the skill requirements of the urban informal sector and the rural sector as a whole. This has resulted in (or coincided with) the manpower rationale being used mainly for senior secondary and tertiary education and with an increasing emphasis on science and technical subjects.

While the manpower development rationale remains the major one, the importance of social equity and nationbuilding-shared value considerations have grown in importance. These have mainly concentrated on primary schooling but as the latter becomes universal, the same arguments are being made for junior secondary schooling. Overall, it appears to be becoming more the case that the rationales for expanding the lower levels of education are differentiated from those for the higher levels.

In addition to the equity and nationbuilding rationales having increased in importance, other emphases in educational plans have also begun to restrict the dominance of the concern with purely enrollment expansion dictated by manpower considerations. These emphases have been aimed at increasing efficiency within the system to achieve largely pedagogic

objectives and reduce dropout and repeater levels. In recent years, stress has been placed on curricula reform, increased teacher education and in-service training and, even more recently, on the increased provision of learning materials including textbooks. Comparative studies of the levels of learning for a given period of schooling in developed and developing countries have indicated very large differences (Heyneman and Loxley, 1983). Encouragingly, those programs which have been aimed at increasing quality through the provision of additional resources appear to be showing significant results (Schiefelbein, Farrell, Sepulveda-Stuardo, 1983). While this increasing concern with school quality obviously has implications for manpower development, the emphasis is not on increasing the number of people flowing from school to work with a given 'qualification'. It is more concerned with increasing the levels of learning and achievement.

Even though not all education policy is based on considerations of manpower development and even though, according to national education plans, other rationales may be gaining in relative importance it is still the case that such considerations dominate. Further, while political and social goals may have been accorded more weight in the 1970's, the increasingly difficult economic and public finance environment likely to face the developing countries through the 1980's can be expected to result in an increased concern over the economic efficiency of educational expenditure. This can be seen in two ways - an increased preoccupation with external efficiency and the relationship between school and work and, secondly, a greater concern that whatever internal or external objectives are chosen for the education system, they are achieved in the least cost way. In the next section, therefore, a brief look is taken at the methodologies which have been developed for analysing the economic implications of educational projects. A much more developed discussion of this is included in the later chapters.

4. TECHNIQUES FOR THE MANPOWER ANALYSIS OF EDUCATION PROJECTS

Two basic models and a number of variants have been developed for guiding educational development in line with demands emanating from the labor market. These are the manpower requirements model and the cost benefit (or rate of return) model. The forms in which both are applied today in developing countries were basically developed by the mid 1960's. Since then, application of the manpower requirements model has spread across the countries of Africa, Asia and Latin America and more or less become a requirement for securing budgetary funds and international agency loans for educational expansion. The cost benefit approach on the other hand has rarely, if ever, been used as the single justification for education projects. For practitioners involved in education and manpower planning it would appear, at first sight, that the manpower requirements model has achieved widespread credibility.

This apparent credibility of manpower requirement forecasting has developed in the face of constant criticism over the last 15 years or so from, in particular, academic economists. This criticism has been made at both a purely theoretical level and on the basis of empiricial evaluations of actual forecasting exercises. The model favored by most of these economists has been the cost-benefit one, solidly grounded in the assumptions and theories of neo-classical economics. In the same way that practitioners have been little influenced in their work by the theoretical arguments of their academic counterparts, the response to the cost- benefit model by practitioners has had little effect on the views of the academics. The intuitive appeal of each model is very strong, but in obviously different ways.

Much of the rest of this section contains arguments against the use of the manpower requirements model as the single guideline for educational planning. These arguments are not made because we, and the other authors in this volume, believe that this model is never applicable and should be totally substituted for by the cost benefit model. That there are problems and limitations to cost benefit analysis is also accepted. The emphasis on the criticism of using the manpower requirements approach is simply because it is so dominant and is chosen as the only technique to analyse the manpower implications of education projects in most developing countries. Since the theme of this and subsequent chapters is the need for a more eclectic approach to the use of techniques and the substitution or complementation of technique by a planning process, it is the monolithic position of the manpower requirements approach which most needs to be addressed.

The two models have been extensively described and discussed over the last two decades. Here we comment on only a few of their essentials and the major theoretical divergences. The main emphasis, however, is in examining the problems of interpreting the results and the implications of these for decision- making. Some of the consequences of relying on a single model, in this case the requirements model, to examine the implications of education projects are also discussed.

Returning to terminology introduced above, the emphasis of educational planning models has mainly been on the external efficiency of the school system in terms of linking graduates into the world of work. The way in which this efficiency is viewed and hence measured, however, differs between models.

- According to the manpower requirements approach, the gains resulting from the expansion of education come from the ability of the economy to achieve certain increased levels of production. Educational projects are justified in terms of supplying skill requirements once production targets have been decided upon. Without the production of these skills it is argued that planned levels of output cannot be reached. Education targets are thus linked directly to specific production targets.
- According to the cost - benefit approach, efficiency gains result from educational expansion if the social benefits exceed the social costs (at an appropriate rate of discount). This approach is framed in terms of the relationship between the costs of education and the resulting increased productivity of graduates in whatever economic activity they work. In considering the further expansion of education it is argued that if the rate of return is above the rate set as the criterion for government investment, this can be interpreted as a signal to expand, and if lower, as a signal against expansion or for contraction.

a) The manpower requirements approach

The point was made forcefully by Blaug as far back as 1967 that the two approaches are based on very different judgements regarding how the labor market operates in a market economy (Blaug, 1967). Emphasis came to be placed on the centrality of substitution assumptions in each approach and in particular on the potential for substituting one labor type for another. Put simply, the manpower requirements and cost - benefit approaches assume zero

and infinite substitution possibilities respectively. In the late 1960's and early 1970's a number of attempts were made to derive empirical estimates of the degree of substitution. While the data and methodologies used cannot be said to have been beyond criticism enabling a definitive judgement to be made, all attempts pointed in the direction of implying that substitution possibilities, while not being infinite, exist to a much greater extent than is assumed in the manpower forecasting methodology.

Around this same time, the theoretical testing of the manpower forecasting model was complemented by a series of now well-known evaluations of forecasting in practice, the most widely quoted being Hollister's (1966) work on the OECD's Mediterranean Regional Project, Jolly and Colclough's (1972) review of manpower planning exercises in 20 African countries and the collection of case studies from eight countries in Ahamad and Blaug (1973). In all of these, judgements on the methodology and accuracy of manpower forecasting were critical. In addition, the OECD's major attempt in 1970 to collate and analyse international data on education - occupation - economic patterns in a search for some stable relationships which could be used in planning concluded that such relationships did not exist (OECD, 1970). A wide range of unexplained variations were described implying that a given economic structure can co-exist with a number of occupational and educational structures.

Since the early 1970's, the debate over manpower forecasting has seen little movement. The critical bombardment appears to have had no effect on practitioners' use of the approach and more and more countries have in fact adopted it. In turn, many of the academics have directed their efforts elsewhere, either outside the subject into areas such as the 'new household

economics' or within it to detailed analyses of earnings determinants and distributions. However, a preliminary review of forecasting experience over the last decade has recently been made by Debeauvais and Psacharopoulos (1983). After commenting on the increased proliferation of manpower forecasting, they argue that,

- manpower plans continue to be growth oriented and few integrate objectives of equity or social demand,
- most plans are limited to a concern with wage employment in the formal sector,
- huge discrepancies exist between the actual rates of economic growth and the assumed ones upon which the manpower forecasts are based,
- occupational mobility is seriously neglected and the greater the mobility, the less accurate and useful the forecasts are,
- countries at similar levels of economic development have experienced diverse educational and occupational structures.

Again, such statements provide little support to the requirements forecasting approach. However, the methodology behind the forecasts involves a number of discrete steps and it is, therefore, relevant to ask whether some of these involve more stable relationships than others. The answer appears to be that the accuracy of occupational forecasting is greater than that of educational forecasting and that greater accuracy is achieved at the industry level than for the economy as a whole. This implies that the best estimates will be for single (and <u>some</u> groups of) occupations at the industry level and will be of use primarily in undiversified economies or in forecasting the requirements for occupations involved in very few industries. Again, these findings are not encouraging for purposes of educational planning but they do perhaps imply that the alternatives are not only limited to the acceptance or rejection of the requirements model in its entirety.[23]

While the application of the manpower requirements model has continued to spread, the impression is sometimes gained from those involved that they are aware of all the criticisms which have been made and often accept them. Indeed, individuals in manpower development units are sometimes almost apologetic about this forecasting work. These units, however, tend to be dominated by the Central Planning Office or Ministry of Finance and these bodies invariably require quantitative estimates for their development plans. In these circumstances, manpower requirements forecasts are made not because of a trust in the approach but because alternative approaches are considered even less trustworthy or are methodologically more demanding. Before any alternative approaches for assessing education projects, and their problems in providing a single framework for analysis, are briefly discussed it is useful to list those aspects and objectives of education which are left out of the requirements approach. The headings listed in section 3, above, which summarise the preoccupations of national education plans over recent years form a suitable framework:

Manpower development Even if occupational requirements are accurately forecast, the approach offers no guidance for selecting the ways in which skills are formed. Particularly at the skilled manual worker level the alternatives of on-the-job training, firms' training courses and a range of possible institutional modes exist. In addition, the approach does not itself ask the question whether the cost of training people to meet certain targets of increased production are worthwhile in economic terms.

Equity The requirements approach provides no framework for analysing projects directed to increasing equality of access.

Nationbuilding Again, the approach gives no consideration to the non-cognitive products of education.

Increased quality In converting occupational requirements to educational requirements, the forecasting approach necessarily considers educational quality and the skills produced. It does not focus, however, on recently posed questions such as the impact of additional textbooks, the upgrading of teachers, and curriculum development on the level of learning and consequently on productive performance.

Increased efficiency Similarly while questions of dropouts and repeaters are implicitly focused on by the approach -- since the levels of these affect the reaching of targets--an assessment of measures to improve school performance in these areas, and in others, such as by the use of double shifts, is not covered.

The manpower requirements approach has been shown to suffer from theoretical limitations and to have often produced inaccurate forecasts. Although it is currently used in more countries than ever, the approach is often viewed sceptically by practitioners and as the objectives of education plans widen, its focus appears increasingly narrow. However, because the debate over planning techniques has been largely conducted on an all-or-nothing basis, adoption of the requirements approach has then tended to rule out the search by practitioners for, and the adoption of, other analytical approaches to at least use alongside it. One such approach is cost - benefit analysis.

b) The cost- benefit approach

In the following papers it is suggested that there are areas within the sphere of educational planning where a cost-benefit framework is the most applicable one. This is not to say that such a framework is regarded as being capable of answering all questions or that forecasting exercises are in all cases inappropriate. In addition, while it is in principle capable of considering more of the rationales for educational development than is manpower forecasting, it is not an appropriate appraisal tool for those projects based on human rights, and nation building considerations.

As mentioned previously, the cost-benefit approach has had a strong intuitive appeal among academic economists and what testing of the labor market there has been appears to corroborate several assumptions of the approach. Over the past twenty years, however, a long list of objections has been directed at this approach as a basis for guiding decisions in education. Among these are the equation of earnings differences with productivity differences, the inability to show to what extent the higher earnings of the higher educated are caused by that education, the narrow interpretation of even the direct economic benefits of education, the lack of quantitative solutions and the inability to be able to forecast and measure the benefits over a lifetime.

This last point is of particular concern for interpreting rates of return for policy purposes. What is required is a measure of lifetime productivity increases resulting directly from marginal increments in educational investment. The nearest we can get to this is earnings differentials derived from cross sections of the existing workforce. The procedure of using cross-sectional data means that a picture of the labor

market is provided which reflects the current experience of graduates of all ages. It does not necessarily reflect the prospective experience of current new graduates and is even more unlikely to be an accurate assessment of the experience of graduates entering the labor market several years in the future as a result of investment decisions made today. What actually happens to the earnings differentials between differently educated groups in the future will depend on changes in both supply and demand. That these might occur in ways which result in the differential remaining unchanged would be a pure coincidence.

In which direction are rates of return likely to move? For a few specific skills, demands in the short term may outrun supply and the returns increase. In most cases, however, the rate of growth of educational outputs has tended to increase faster than the rate of economic growth and over time one can expect a downward pressure on differentials by educational level and hence on rates of return. Evidence of several rate of return calculations for the United States using cross sectional data at different points in time over the last 40 years corroborate this expectation as do calculations made for Colombia in the mid 1960's and mid 1970's, (Psacharopoulos, 1981, Tables 5 and 7).

Where this leaves us is that a low rate of return calculated in the conventional way using cross sectional data cannot be expected to be an underestimate of the true lifetime return. Therefore, unless there is evidence to suggest that wages are being artificially held down by the government, educational expansion is not justified on purely economic grounds. When returns are high, further analysis of expected future supply and demand and hence of changes in wages is both justified and required. This argument suggests that if rate of return calculations are made they should

only act as a first stage screen and that further analysis of the future behavior of labor markets is then required. This is not however the cue for the rehabilitation of manpower requirements forecasting. As Hollister forcefully states in his conclusion, what is required is, "a program which puts less emphasis on manpower forecasting and more emphasis on manpower analysis of the operation of various aspects of the labor market at all skill levels." The nature of this analysis is the concern of the remaining part of this chapter and other chapters in this volume.

5. FROM PLANNING TECHNIQUE TO PLANNING PROCESS

Shifts in the importance given to the various rationales for educational development outlined in section 3, above, add additional weight to the argument that neither of the two main competing analytical frameworks can encompass the whole range of planning issues and that within government manpower development agencies, a more diversified approach is required. The changing distribution of lending also suggests that a wider approach to project appraisals is required within development assistance agencies. Two significant changes have recently occurred in lending patterns. First, more and more projects are including the provision of classroom materials and in-service teacher training which reflect an increased concern with school quality. Second, the proportion of loans devoted to primary schooling has increased significantly - for the World Bank from only 5 per cent between 1970-74 to 24 per cent between 1979-83. In addition to lending increasing faster in those areas least amenable to manpower requirements analysis there is another reason for shifting emphasis away from approaches which attempt to judge whether or not an expansion is justified in pure manpower terms. This is that, in practice, such proposals which originate within governments are very rarely rejected for funding. Consequently it may be more productive for

manpower/educational planners to spend time in other areas than making manpower forecasts or fully fledged cost-benefit calculations. Such areas would include a major concern with internal efficiency, cost-effective- ness, rationalisation of competing training modes, subject or curriculum bias balance, teaching effectiveness, the timing of irrevocable decisions on specialisation and, in general, in adding an analytical input and direction to government decisionmaking. While international agency staff cannot possibly participate as equals in all discussions with government personnel on these issues, their experiences with different educational technologies across countries suggests that in the area of formal cost- effectiveness analysis of such technologies, they have a clear advantage.

These changes in the composition of educational loans also reflect similar changes in education spending as a whole. Because of this, plus the need to replace the requirements approach in several of the areas in which it is now used, an increased range of techniques and analyses are required within manpower development units. These are spelled out in greater detail in the other papers but include: more concentration on cost-effectiveness, a comprehensive development of tracer studies and their results linked back to costs, careful development and use of labor turnover and vacancy surveys, analyses of wage structures and movements, studies of the impact of alternative financing arrangements on access and take-up, development of methods and procedures to improve employer expectations surveys, and studies of the impact on schooling achievement of additional resources or changes in their composition.

The adoption of a wide range of techniques and analyses to replace a single, internally consistent approach, however, requires another form of discipline. That discipline, it is argued throughout the chapters in this

volume, can be provided through administrative procedures and the formalisation of tasks which together can comprise a consistent planning process.

Both Dougherty and Hollister produced their papers as a result of spending a period of time attached to a manpower development unit in a developing country. While both are academics these experiences led them to judge the educational planning literature from the viewpoint of the practitioner. Quite obviously, they found it left much to be desired. Their views are summarised below.

Dougherty's paper begins with a consideration of the experiences of development planning in general. Three points are put forward:

- Gains from increases in organisational efficiency have been at least as great as those resulting from the application of formal analysis.
- It is naive to separate the choice of technique from the institutional arrangements since the way in which decisions are made affects their operationality.
- Many development projects do not lend themselves to formal methods of project appraisal.

One implication of these experiences for planning manpower development in developing countries is that while the value of qualitative forecasting or rate of return analysis for guiding manpower developing planning should not be underrated, it is unrealistic to believe that either singly or jointly they can cover the whole sector. As a consequence of this, it is argued that a manpower development unit should be primarily concerned with providing information and designing procedures to help ensure that decisionmaking carried out by the numerous agencies involved is rational in

the sense of being consistent with predetermined economic, social and political criteria. In the rest of his chapter Dougherty attempts to show how this might be done.

Essentially, since in his view an operational theoretical approach to manpower planning does not exist, a unifying framework for analysis and policymaking requires the construction and repetition of what is termed an "annual routine." Such a routine results in learning from experience, economises on decisionmaking and initiative, prevents necessary activities being crowded out by ad hoc crises and maintains continuity of focus in the face of staff changes. While a definitive list of tasks for the annual routine is not included, since it is obvious that many of these will vary by country, some suggestions are made. These are grouped around the headings of administrative capacity, information flows, efficient use of existing resources, enrollment policy, and, other policy issues. Each task is executed at a specific date during the year.

Turning to a consideration of lending agencies, the point is directly made that the development of Borrowers' planning capacity should be the single most important objective. The adoption of an annual routine, however, will have two consequences for the Lender. First, there will be a necessary downplaying of formal analysis and second, the concentration on continuous programming may conflict with the discreet project approach adopted by lending agencies.

Dougherty concludes that the effective management and planning of the manpower development sector is conditional on the existence of a centralised co-ordinating agency involved in a continuous planning process plus the increased use of cost-effectiveness analysis.

The concerns of Hollister's chapter can succintly be described as follows:

- The practice of manpower planning in developing countries has not significantly changed over the last 20 years and remains unsatisfactory.
- The claims of accuracy made by manpower forecasters have relieved educators from a feeling of responsibility for the graduates of their programs.
- There has been a misallocation of effort by manpower development agency staff in favor of method as opposed to attempts to improve flows of information and to understand how labor markets actually function.

The underlying rationale for manpower planning is said to be the avoidance of labor surpluses and shortages. This should lead naturally, according to Hollister, to a consideration of the nature of labor markets since the choice of manpower planning activities requires a conception of how these markets operate. Without going into detail in this summary, the argument is made that, particularly in the private sector, the labor market in developing countries is largely characterized by flexibility.

Behind the formulation of more appropriate manpower planning activities which is the basic concern of Hollister's chapter are three key statements:

- Skill shortages and surpluses are only critical when the gestation period for the formation of a skill is lengthy.
- The majority of people with such skills are typically employed in the public sector.
- International experience indicates that attempts to forecast manpower requirements are not likely to be very successful.

On the basis of the first two of these, he argues that since the gestation period for the majority of labor groups is short and since the majority of those who do require lengthy training are employed by the public sector where employment patterns are determined more by specific public policy and institutional organization than by expected changes in economic structure, economy wide manpower forecasting is largely unnecessary. The third element argues that in those cases where training periods are lengthy and such forecasts might be useful, on the basis of past experience they cannot be expected to be very accurate.

The alternatives for manpower analysis which Hollister suggests appear, as he admits, "various, scattered, difficult to implement and, perhaps, even ad hoc." Within an organisational framework such as the one suggested by Dougherty, however, they are seen to be capable of generating the most useful forms of information. Much of the rest of the chapter is devoted to a discussion of the labor market characteristics of high, middle and low level manpower in the private and public sectors and the various types of analyses which are seen as being the most appropriate for the purposes of increasing labor market efficiency. These analyses require the maintenance and utilisation of regularly collected time series data. Discussion of this is then presented. In the final section, Hollister turns to the role of the development assistance agencies. Here he sees the priorities as assistance in evaluation, data improvement and the methodological refinement of tracer studies, wage and labor turnover data.

The authors of this volume argue that there are severe limitations to the practicability and usefulness of both manpower forecasting and rate of return analysis for determining, alone, the optimum pattern of educational

investment. This leads to the view that no single approach to the economic analysis of education projects should dominate and be used comprehensively. The alternative is a wider use of approaches, but within a well ordered administrative framework such as the one described in the following chapter.

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II. MANPOWER DEVELOPMENT PLANNING FROM THREE POINTS OF VIEW: COUNTRY, TECHNICAL ASSISTANCE AGENCY, AND LENDING AGENCY

Christopher Dougherty

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INTRODUCTION

In recent years there has been a gradual change of emphasis in planning theory. It is being increasingly accepted that planning is a process and that its effectiveness depends as much on the form of this process as on individual modes of analysis.

Twenty years ago the possibility of using cybernetic processes for planning purposes seemed very attractive to economists who had been exposed to engineering mathematics. The design of countercyclical macroeconomic stabilization policies was an initial fairly modest application. Later, the spectacular success of the use of feedback control in the NASA space programme provided inspiration for the construction of elaborate computer models which used sophisticated routines for the design of optimal policy.

Useful though these models may have been for organizing thought and for academic teaching, none has ever had any practical value for the purposes of economic planning. Economic problems are far more complex than those encountered in engineering and are correspondingly less amenable to this type of approach. Eventually most of those involved in building such models came to feel that their time could be better used elsewhere, and, in the reaction that followed, terms like cybernetic acquired a pejorative association and were discarded from the economist's vocabulary.

This experience had the extremely damaging consequence of inhibiting the exploration of the extent to which cybernetic principles could in some other form be applied to economic planning. In the context of manpower development planning, rate of return analysis is all that has survived, and its application has been sporadic.

However there are signs that a reformulated cybernetic approach to planning is beginning to emerge.1/ Since no clear statement of its application to the manpower development sector as yet exists, the following outline is as much advocative as descriptive. 2/

a. The notion that a formal mechanistic model could provide a useful framework must be wholly abandoned. The sprawling diversity of the manpower development sector calls for an approach which is flexible in technique and highly disaggregated in application.

b. An extremely eclectic variety of types of feedback may be employed. Prominent among them may be quantity signals derived from the traditional manpower requirements approach, or price signals expressed in the form of rate of return analysis, but in addition a wide variety of other types of labor market information, qualitative as well as quantitative, may be employed.

c. Some of this feedback will be monitored and responded to by a centralized government planning agency, which will be described as the Manpower Development Planning Unit (MDPU), but much will pass directly between the main actors interested in manpower development:

1/ For economic planning in developing countries the watershed was reached with Faber and Seers (1973), the essays by Seers, Leys and Waterston being particularly influential. However, most of the running in recent planning theory has been made by other disciples, especially Social Administration, Regional and Urban Planning, and Operations Research. Contributions to their literature tend either to be very abstract or so specific that they are of little value outside their original application, but some, notably Faludi (1973) and Friend, Power and Yewlett (1974), are relevant to economic management.

2/ It owes much to discussions with R.G. Hollister and M.J. Selowsky.

institutions responsible for education and training, individuals considering enrolling in their courses, planning agencies and employers. A major objective of the MDPU will be to develop these flows of information with the aim of promoting rational, decentralized decision-making and thereby reducing the need for direct intervention by itself.

d. The MDPU will seek to attain its objectives by collaboration or delegation rather than command. One main function will be the systematic and regular assessment and transmission of feedback signals to other institutions. Another will be checking the effectiveness of institutional arrangements and channels of communication.

e. These functions will involve the repetition at regular intervals of a large number of heterogeneous activities. To ensure that they are executed systematically, it will be necessary to impose the discipline of a formal schedule such as an annual routine.

f. In as far as the policies of the MDPU are determined by economic, rather than social, cultural or political, considerations, the optimal use of resources will be its guiding principle, and rate of return and cost-effectiveness analysis the preferred form. However, except for a few special cases, its decisions will be based on informed conviction rather than formal analysis, and when formal analysis is undertaken, it may utilize other techniques as appropriate.

These points will be discussed in Section 2. Sections 3 and 4 will trace the implications in general terms for Technical Assistance Agencies like the International Labour Office and for Lending Agencies like the World Bank. Section 5 presents conclusions and recommendations. 40

2. THE BORROWER: A CONTINUOUS-PROCESS APPROACH TO MANPOWER PLANNING.

This section describes the role of a borrowing country's MDPU in some detail, both because this is necessary for the discussion of Borrower manpower development planning techniques and, equally importantly, because the difficulties encountered by Lending Agencies in formulating their own criteria originate in large measure in the failure of the typical MDPU to discharge its functions satisfactorily.

It is probably fair to say that the typical MDPU, even when located in an otherwise powerful and effective National Planning Department, is a marginalized institution with little or no systematic influence on manpower development strategy.

There are several possible reasons for this. First, the MDPU may not have assumed responsibility for a systematic manpower development strategy. Either institutional arrangements do not allow it to assume such a function, or those responsible for establishing it or supervising it have not included this function among its designated activities.

Second, where the MDPU has assumed responsibility for a manpower development strategy, it may be discharging it in such a way as to have no practical effect. Again, there are a number of reasons why this may be the case. It may be because its analysis is of no practical value to the institutions responsible for manpower development. It may be because it lacks the power to influeence these institutions. It may be because the institutional links for translating its analysis into operating decisions do not exist or have withered away.

(i) The need for a continuous-process approach

The literature on manpower development planning has not given adequate attention to the role of the MDPU in promoting organizational efficiency in the manpower development sector. There appears to be an implicit assumption that manpower development planners should confine themselves to deriving criteria for determining enrolments, and that such institutional issues as the development of new institutional arrangements and the maintenance of effectiveness of existing ones should be allowed to take care of themselves or be subcontracted to specialists in other fields.

However, one of the main lessons of the evaluation of development planning experience that has taken place over the last decade is that, even if one is narrowly concerned with economic efficiency, the gains that can be made from promoting organizational efficiency may be as important as those that accrue from the application of formal analysis to objectives. 3/ This is certainly the case in the manpower development sector in many developing countries.

A second lesson is that it may be naive to attempt to separate the choice of analytical technique from a consideration of institutional arrangements, since the processes by which decisions are made and implemented may have a bearing on what kind of decisions are operational. Again, this is particularly the case in the manpower development sector, where the MDPU cannot hope to be more than a partner in a decision-making process, regardless of the formal powers at its disposition.

3/ For a detailed argument along these lines and a description of organizational planning reform in Papua New Guinea, see Allan and Hinchliffe (1982).

The manpower development planning literatue has also neglected the question of how to devise a manpower policy for those occupations whose demand is not susceptible to formal analysis. While it would be foolish to underrate the value of quantitative forecasting or rate of return analysis as alternative, not necessarily mutually exclusive, types of feedback for guiding manpower development planning, it would be equally unrealistic to suppose that either singly or jointly they can cover the whole sector.

Although its most committed proponents may disagree, quantitative forecasting has been of most value for those occupations whose demand may be related to demographic, social or political norms, such as school teachers, doctors, nurses and police. Efforts to forecast the demand for other occupations have been undermined by a poverty of data, the difficulity of allowing for the different types of substitution that affect employment, and the heterogeneity of the different types of manpower. Such forecasts have either been insufficiently disaggregated or too sensitive to questionable assumptions, or both, to be of value for guiding the enrollment policies of manpower development institutions.

Similarly, a poverty of data and uncertainty about the future limit the scope for applying rate of return analysis. Although few would be opposed in principle to its use as an economic criterion, in practice it has been confined to high-volume types of manpower development such as primary education, the major branches of secondary education, and some professions and trades. While its potential scope remains unexplored because little effort has been made to incorporate it systematically in policymaking, it is safe to say that most of its proponents would agree that for many types of manpower development it should at least be accompanied by other types of evaluation.

These considerations have two interrelated implications of fundamental importance.

First, a mechanistic approach to planning the manpower development sector is wholly inappropriate. Instead the MDPU should view the institutions responsible for manpower development or employment as forming a complex organism. It will be concerned to ensure that the components of the organism are functioning effectively and that the processes which link them are operating as intended. The chief modes of operation of the MDPU will be delegation, collaboration and monitoring, rather than command, both because it has little effective control over other institutions and because it lacks the resources and expertise to give detailed guidance. The MDPU will therefore have to design with especial care its transactions with other institutions in the sector. This is essential for ensuring that policy analysis and decision-making take proper account of the way in which MDPU decisions are translated into operating decisions and implemented.

Second, the MDPU will be primarily concerned to ensure that decision-making within the sector is rational, in the sense of being consistent with economic, social and political criteria, and of meeting them as effectively as possible. Because the traditional types of analysis are subject to large margins of error and because the newer forms do not pretend to yield measurable indicators, and because several different types of analysis may be applied in the same context, manpower development planning decisions will usually be taken on the basis of informed conviction rather than directly in response to formal analysis. Regardless of what methodologists may say, those actually involved in the preparation and appraisal of manpower development projects will confirm that this is a fact, and that the use of formal analysis for project justification is frequently merely cosmetic.

Obviously the nature of the informed conviction will depend upon the context and the skill of the decision-maker. For many types of decision, nothing more than common sense is required. For others, particularly those which involve simultaneous relationships, the operation of markets, or considerations of opportunity cost, a proper training in economics may be essential. Some decisions may be uncontroversial, but others which have to be made without adequate data may not. The objective of the MDPU will be to ensure that lack of data and other constraints do not prevent decision-making from being as good and timely as possible.

(ii) The need for an annual routine

An organic orientation can only be effective if the MDPU monitors the activities of collaborating institutions comprehensively and regularly. In view of the poverty of information it is inevitable that manpower development decisions will prove to be in need of constant revision, and the more quickly and systematically this revision takes place, the less will be the waste of resources. This process of revision and adjustment is of course the heart of a cybernetic approach.

Since many operating decisions within the manpower development sector are taken on an annual basis, it will be natural for the monitoring tasks to fall into a cycle of this length, and in what follows this cycle will be termed the annual routine. It should be noted, however, that some tasks may need to be repeated at longer or shorter intervals than one year.

The establishment of an effective annual routine will be important for several other reasons. First, it will provide a disciplinary framework for the activities of the MDPU. If an operational theoretical approach had existed, this might have provided the unifying framework for articulating analysis and policy-making. Since such a framework does not exist, some other

means has to be found for organizing the activities of the MDPU, and the annual routine will help to ensure that its responsibilities are discharged in a regular and orderly manner.

Second, the repetition of a well-defined set of tasks on a regular basis provides a means by which the MDPU may learn from experience and acquire general knowledge of the manpower development sector upon which its informed conviction must be based. In addition, the repetition of the tasks will give it an opportunity to implement this learning by introducing piecemeal improvements.

Third, an annual routine economizes on decision-making and initiative by making it unnecessary for the MDPU to design its program from scratch each year.

Fourth, the establishment of a formal annual routine will help to protect the constituent activities which though important may not at any given time seem to be urgent, from being crowded out by the ad hoc activities that also form part of the duties of the MDPU.

Fifth, it maintains continuity in the operations of the MDPU, protects it from the erosion of institutional capital when staff members leave, and provides a training guide for new staff.

Most non-planning institutions possess an annual routine and indeed would collapse into chaos if they did not. Paradoxically, planning agencies tend not to be subject to this discipline, a possible explanation being a preoccupation with ad hoc projects and the medium or long term framework that dominated the early planning literature.

(iii) The composition of the annual routine

The opportunities for constructive intervention by the MDPU will be as manifold and heterogeneous as the institutions and processes that comprise the manpower development sector. It is therefore not easy to classify systematically the tasks that will form the annual routine. However, important categories will be:

a. Tasks designed to improve the administrative capacity of decision-making units in the manpower development sector.

b. Tasks designed to improve information flows within the sector.

c. Tasks designed to promote the efficient use of resources within the sector.

d. Tasks designed to guide enrollment policy of manpower development institutions.

e. Tasks relating to other policy issues.

Although the manpower development literature has focussed on analysis which would be classified under the third or fourth headings, in many countries the gains made under the first two may be both more substantial and more immediate. It is not unusual to find large parts of the sector administratively derelict, and it need hardly be said that this must be rectified if rational decision-making and effective partnership are to be possible. Furthermore, the promotion of administrative competence is not a once-and-for-all task. Although some institutions in the sector may be capable of adapting expeditiously to circumstances as they change, this is unlikely to be true for all, and in any case should not be taken for granted. While the MDPU may find that the proportion of its energy which needs to be devoted to such tasks diminishes as progress is made, it will always need at least to monitor this aspect of the health of the sector.

Similarly, there may be very great scope initially for improving information flows, both creating new sources of information and rehabilitating existing channels of communication that have wasted away. The objectives will be to improve the operation of markets and to improve the response of institutions in the sector to economic, social and political stimuli. These tasks also should become less demanding as time goes by.

This is not the place to attempt to give a comprehensive list of the tasks that might form an annual routine. The examples outlined below are intended only to illustrate its wide-ranging character.

(iv) Tasks relating to administration

The MDPU needs to ensure that the record-keeping of major manpower development institutions and certification bodies is systematic and timely. Manpower development institutions will at least have to provide data on enrollments and graduates by type of course, teachers by qualification, age and geographical location, and current and capital expenditure. Certification bodies will provide data on numbers of candidates by test result.

In some countries professional institutes are responsible not only for granting qualifications but also for maintaining a register of practising members. This can be a very useful source of stock data for occupations with substantial employment in the private sector. The MDPU may wish to give registration legal force, requiring membership to be renewed annually, and increasing the amount of information requested at renewal.

The MDPU needs to ensure that effective planning offices exist in the major manpower development institutions, particularly the Ministry of Education, the universities and the Ministry of Labour if the latter is responsible for a significant amount of industrial training.

An especially important example of an administrative task for the MDPU is the monitoring of forward planning by the Ministry of Education Planning Unit (MEPU). In those countries with reliable population estimates the MEPU should be in a position to prepare medium term projections of enrollment in primary education and the major branches of secondary education, making appropriate assumptions about drop-out and repetition rates and the proportions entering different branches of secondary education. As a corollary, using assumptions about student-teacher ratios, it should be able to derive projections of teacher requirements by qualification. Although in principle such calculations can be executed manually, it is generally much more convenient to construct a computerized accounting model for the purpose.

Teacher wastage should be estimated from stock data and hence estimates of net requirements obtained. Again, the calculations may be executed more efficiently if the payroll of school staff is computerized. If conditions warrant, the MDPU may wish to encourage both types of computerization, bearing in mind that although the software for each is by now standard and readily available, a substantial investment in technical expertise must be made at the time of introduction in three major respects: the adaptation of the software to local conditions, the training of staff to operate the system, and the adaptation of data collection.

Since these tasks need to be executed only once, supervision of the introduction of computerization in the MEPU should be regarded as an ad hoc project rather than part of the annual routine of the MDPU.

Supervision of the use of these systems, however, constitutes an important part of the annual routine. Representatives of the MDPU should have one or more meetings each year to ensure that the accounting system and projections have been updated since the previous year and the results

translated into an updating projection of teacher requirements. The MDPU will examine both the key inputs - school data generation, projection of the school age population, and assumptions concerning future class sizes, promotion rates and repetition rates - and the output in the form of an analysis of teacher stock requirements.

The MDPU should also ensure that the teacher-training projections have been updated. Key inputs here are the projection of the required teacher stock, data on the existing teacher stock gathered from the payroll, and assumptions concerning the rates of wastage and return of female teachers after raising families. The output is a suitable analysis and the presentation of the results for giving specific guidance to teacher-training institutes.

The MDPU will also be concerned to ensure that the personnel offices of major employers are properly organized for the recruitment of manpower. The largest employers may be encouraged to utilize company manpower planning techniques designed to balance the internal supply and demand for positions of responsibility and provide orderly career structures. Since the MDPU is unlikely to have the resources or expertise to provide such assistance itself, it should promote the establishment of a specialized institute for the purpose for the public sector, and possibly a counterpart for the private sector.

In-service training is another area where the MDPU may be able to make a contribution to administrative efficiency. Such is the dispersion and variety of this important category of manpower development that it is extremely unlikely that the MDPU will be able to monitor it directly to any great extent, never mind make quantitative recommendations concerning the extent of its provision, but it may be able to play a positive role in its

institutional arrangements. First, there will be the question of whether a given type of training should be offered by a specialized agency or undertaken by the firms themselves, either independently or on a group basis. Second, there will be the question of how to fund such schemes and how to provide incentives for training to be undertaken on an appropriate scale. The MDPU may be able to make an initiative in consultation with the corresponding Employers' Federation, the largest individual employers and the Planning Office of the Ministry of Labour.

(v) Tasks relating to information

No matter how well organized and well staffed it is, the MDPU can be responsible for only a small proportion of the decisions affecting manpower development. Since the decision-making of those participating in training and labor markets offers an alternative to its own efforts, it is in the interest of the MDPU to promote efficiency in the operation of these markets and in particular to improve the information available. Indeed, it is fair to say that an MDPU which fails to take advantage of autonomous decision-making is likely to be overwhelmed by its task and to have very restricted practical influence.

There are two major problems. First, human capital is an investment good and markets in investment goods are notoriously difficult to regulate. Second, the decision to undertake investment is in general made by two separate entities, the manpower development institution and the individual undergoing education or training.

Typically official labor market statistics are of limited value for decision-making. Relative wage rates and overtime rates are not disaggregated in sufficient occupational detail or by skill level within an occupation, and

the unemployment and vacancy data published by the Employment Service of the Ministry of Labour are further undermined by partial coverage. Hence the subjective evaluations by key informants of the current state of the market for an occupation and its likely future prospects may also have a useful role to play, making up in balance and perspective what they lack in empiricism. 4/ The assessment of prospects may well turn out to be inaccurate, but nevertheless may be as valuable as any other information given lack of data and uncertainty about the future. Typical key informants would be the officers of the Ministry of Labour Employment Service and personnel managers of representative employers. For all except high level manpower, collection and publication of assessments should be undertaken on a regional basis.

In many countries surprisingly little attention is given to providing information for the benefit of the individual. Since assessments of key informants published in the usual official organs are likely to reach a very restricted readership, it would probably be advantageous to seek republication in the newspapers, say on an annual basis at a time when educational decisions are being made.

The MDPU can play a useful role in stimulating the collection and publication of such data by one or more centralized agencies, say the Ministry of Education's Scholarships Department for formal education and the Ministry of Labour for industrial training.

The MDPU may also consider encouraging manpower development institutions to conduct tracer studies on its graduates, but if it does, it should take steps to overcome the problems associated with them. They tend to

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4/ For a discussion of the role of key informants and experience of their use to date, see Richter (1982).

be costly in terms of the information collected, their impact tends to be undermined by restricted circulation of the results, cumbersome presentation and delays between survey and publication, and they are usually conducted as a one-off undertaking which is difficult to fit into an annual routine and becomes quickly out-dated. There are also problems in the interpretation of the findings, for which there is no well-defined methodology.

For those types of manpower where there are relatively few manpower development institutions and employers, the MDPU may wish to encourage direct communication between the two groups. Employers may be in a position to provide short-term quantitative forecasts of requirements and they should also be able to give guidance on curriculum development. It is common, for example, for employers to be represented on advisory or even governing boards of institutions responsible for the development of high-level manpower, but such arrangements tend to become moribund unless an active policy is adopted to prevent this.

A further category of information which may be of especial use to the MDPU and should not be overlooked are the ad hoc studies undertaken by the universities, research institutes, employers' federations and other bodies. The MDPU should collect such studies on a systematic basis and publicize their existence.

In general the MDPU should avoid a Mercantilist approach to information and promote the institutionalization of flows rather than the acquisition of stocks. In particular, the establishment of a Manpower Data Bank, which tends to be very expensive to maintain, should be resisted.

(vi) Tasks relating to the use of resources

Under this heading comes the monitoring of current and capital costs per student and other indicators of resource utilization. Simple trends in themselves do not necessarily indicate changes in efficiency since they may also reflect changes in quality. For example, a reduction in the student-teacher ratio might indicate a less intensive use of teachers, but it may also be the result of smaller class sizes. Accordingly, the production of statistical data by manpower development institutions should be the starting point of their contribution in this respect, and it is the responsibility of the MDPU to ensure that they are accompanied by a plausible interpretation.

(vii) Tasks relating to enrollment guidance

The MDPU should monitor the way in which major manpower development institutions determine enrollment policy. Ideally, in as far as this is determined by economic considerations, it should be justified in terms of rate of return analysis. However, for some occupations projections of quantitative requirements may be more appropriate, and where suitable data for either are lacking, as is all too frequently the case, decisions have to be made on an intuitive basis. Where formal analysis is used to guide enrollments, the MDPU should review the underlying assumptions.

In the case of rate of return analysis, the MDPU will have to examine the robustness of the estimates in the light of alternative assumptions about future relative wage rates, the replacement and displacement effects of training, and the degree to which existing earnings differentials are attributable to manpower development rather than native ability. It should review the way in which rates of return are used to guide quantitative changes in enrollments and as far as possible encourage such response to take account of the relationships between trends in the rate of return and enrollments as well as current levels.

In the case of manpower requirements projections, the MDPU will have to pay especial attention to the scope for substitution, and if demographic or social norms are employed, their justification should be assessed.

Whether enrollment policy is based on formal analysis or professional judgment, it is inevitable that sooner or later decisions will be in need of revision. It is therefore an important function of the MDPU to see that manpower development institutions have the flexibility to respond to changes in enrollment objectives. In particular, the design of staff structure and physical facilities should have an inbuilt capacity for allowing new courses to be established, obsolete ones to be discontinued, and for allowing those whose demand was underestimated to expand at the expense of those whose demand was overestimated. The MDPU will also be concerned that inertia does not prevent this flexibility from being exercised as needed.

(viii) Tasks relating to other policy issues

There are various types of high-level policy issues relating to the manpower development sector which the MDPU may be better equipped to review than the line ministries. A common example is the question of subsidizing manpower development. Subsidies have the generally desirable effect of improving the accessibility of education and training, but they also tend to make the private rate of return greater than the social rate, creating a demand for places in excess of the number that can be justified on economic grounds, and thereby transforming what may otherwise be a self-regulating training market into one that requires intervention by the MDPU or other planning agency. At the same time subsidies impose a financial burden and are only one of many competing uses of public funds in the sector. The MDPU should periodically update its position on subsidies as circumstances change.

Issues which have implications for other sectors besides manpower development may also be best handled by the MPDU. For example, migration of agricultural workers to urban areas may threaten the production of an export crop and in turn the revenue received by the government through export levies. Possible remedial measures may be a reduction in the export levy which would enable producers to pay higher wages, and a long-term effort to improve labour productivity by developing more mechanized techniques. In any event, analysis of the situation provided by the MDPU may stimulate the ministries concerned to embark upon a coherent and timely policy rather than allow the outcome to be determined by political conflict.

The original formulation of MDPU policy on most issues will require an ad hoc special study, which is not part of the annual routine. However if the issue is chronic and in need of regular review, such reviews should form part of the annual routine.

(ix) Specification of the tasks

The annual routine will consist of a series of tasks which will be executed at specified dates during the year in collaboration with representatives of cooperating agencies.

The preparatory work involved in the task will usually be undertaken by the collaborating agencies. The MDPU will arrange formal meetings with representatives of the agencies for the purpose of discussing their work and the action to be taken.

The MDPU will keep on file a briefing document which will contain the following items:

a. The objectives of the task.

b. A list of the staff members of the MDPU and collaborating agencies who will execute the task, giving post, department and address of each.

c. A list of the reports to be written and other action to be taken at the conclusion of the task.

d. A calendar giving the dates by which the components of the task should be accomplished.

e. Background notes on the task, including rationale and recent experience in its implementation.

f. A bibliography of studies and publications relevant to the task.

The briefing document itself should be updated each year, and it would be convenient to keep it on a word-processor if the MDPU possesses one.

(x) Securing collaboration

In general it will be neither necessary nor desirable for the MPDU to use formal sanctions for securing collaboration from other agencies in the sector. Indeed most agencies will be only too grateful if the MDPU provides leadership in planning, especially if the timing of transactions in the relevant tasks is coordinated with decision-making during the year. For example, the review of resource utilization should precede the preparation of the budget for the next year, and the guidance for enrollments should precede the annual decision on staff recruitment.

The main difficulty will be to replace naive notions of what planning entails by a more realistic conception of the planning process. The view that planning consists of the preparation of detailed forecasts of supply and demand may be deeply entrenched even where the approach is patently impracticable, and changing such attitudes may require the exercise of considerable patience and tact.

If formal sanctions are needed to secure collaboration, the most obvious pressure points are control of capital expenditure, control of current expenditure, and control of staff recruitment. The second and third are usually invested with other centralized agencies of the government, and perhaps the first as well, but if the MDPU establishes good working relationships with the relevant centralized agencies it may be able to exercise a significant degree of influence, at least at an official level. The problem is that these sanctions are blunt instruments and do not in themselves guarantee effective compliance. It is therefore to the advantage of the MPDU if collaboration takes the form of constructive partnership rather than following directives.

3. THE TECHNICAL ASSISTANCE AGENCY

There are two major roles for the Technical Assistance Agency (TAA) in the promotion of effective manpower planning. It can provide direct assistance to the national MDPU by training its staff, instituting the basis of an annual routine, and establishing a self-propelled planning capability. It may also be able to make contributions to the design of individual tasks, drawing on the international experience of its experts and consultants and their experience of what has proved fruitful and what has not.

(i) Direct assistance to the MDPU

The first and possibly greatest problem facing a TAA consultant is the inability of the staff of the typical MDPU to conceive of manpower development planning except in terms of quantitative forecasts of supply, demand and derived training requirements. This is in part due to the continuing effects of the early literature on manpower development planning and in part due to the fact that planning in developing countries still tends to be thought of in terms of blueprints rather than processes.

The difficulties facing the TAA consultant are compounded by the poor economic training of the staff in the typical MDPU. The National Planning Department usually has a limited supply of able and qualified economists and the MDPU is likely to be low on its list of priorities. It is therefore unrealistic to expect to find in most MDPUs staff who are competent enough to establish an annual routine on their own even if they were convinced of its virtues. The solution is for the TAA to make an initial investment in consultant time and provide it with a very detailed manual, and then to provide short-term consultancy aid at intervals with the objective of improving it.

(ii) Accumulation of comparative experience

The other role for the TAA is research into the design of the annual routine and the specification of the tasks within it. In the first place, a central core of tasks will be applicable to a wide variety of developing countries and it makes little sense for each MDPU to duplicate the efforts of others in this direction by designing its own core from scratch. It would be more sensible for the TAA consultant to take a core package and adapt it to the institutional arrangements and specific requirements of the country.

Similarly, international experience may be useful in the design of some of the more specialized tasks of the MDPU, particularly those where there is no obvious approach. For those types of manpower development which are not susceptible to formal analysis and for which informal techniques are not satisfactory, it may be of use to the MDPU to know how its counterparts in other countries have tackled the problem, and on this basis decide how to make the best of a bad job, rather than abandon the task altogether.

4. THE LENDING AGENCY

It need hardly be said that the development of borrowers' planning capability is ultimately the single most important objective of the Lending Agency in the manpower development sector, as in any other. If it can be assumed that the provision of technical assistance, in the form of consultant services, is the role of the Technical Assistance Agency, the contribution of the Lending Agency may be made in two ways: a general adaptation of its own procedures to support the operation of a continuous process approach by the MDPU, and direct assistance by funding training facilities such as management science institutes and by providing research support based on its own experience.

The adoption of a continuous process approach by a national MDPU will have two major consequences for the Lending Agency. First, criteria for project justification, like the planning process itself, will become more flexible and less dependent on particular kinds of formal analysis. Second, the orientation of the MDPU towards continuous programming may conflict with the discrete project approach usually adopted by Lending Agencies.

(i) Project justification

The common practice of couching project justification solely in terms of formal analysis is unsatisfactory since decisions are seldom made solely or even primarily as a result of it: they are usually based on an intuitive feeling that the project is worthwhile, and the role of formal analysis is at most that of providing corroborative evidence. It it is the intent of the authors of a project document to reveal the factors that have been responsible for the project specification, it follows that the considerations which underlie the professional judgment should not be concealed but described in conjunction with the formal analysis. They should certainly not be omitted merely because they are subjective and qualitative in nature.

For those types of manpower development planning where formal analysis has nothing of practical value to offer, insistence on it as a pro forma requirement for project justification leads to the ultimate farce of the real reasoning being completely replaced by make-believe.

This can have two further damaging repercussions. It may encourage those who understand how decisions are really made to undervalue the contribution that can be made by formal analysis, limited though it may be, and possibly allow arbitrary political factors to be more influential than otherwise would be the case. It is even possible that formal analysis may come to be treated as mere window-dressing. Conversely, those who do not understand decision-making may be induced to entertain exaggerated expectations about the value of formal analysis and be unreceptive to the efforts of the MDPU to establish a broader, more eclectic continuous planning approach.

Since an MDPU administering an effective annual routine should be in an infinitely better position than an ephemeral Lending Agency mission to acquire the detailed experience required for a professional judgment, the over-riding aim of the Lending Agency should be to ensure that the necessary institution-building takes place, probably in collaboration with a Technical Assistance Agency. Ultimately this should lead to the MDPU becoming a stronger partner in all phases of a project - identification, preparation, appraisal and execution - and to a corresponding economy in the organizational resources required of the Lending Agency.

(ii) Projects and processes

The effectiveness of a cybernetic approach will be the greater, the smaller the intervals between execution, feedback and response. It follows that the MDPU should aim to implement its feeling-the-way approach by means of

marginal projects commissioned as the result of the annual update. By contrast the Lending Agency, with its comparative advantage in the delivery of construction and equipment, prefers occasional, large projects, since the cost to it of preparing and supervising projects is a function of their number as well as of the total disbursement. As a result of these different perspectives, there is a direct conflict of interest and no easy solution. The cost to the Lending Agency of the small-project approach should be reduced by the increased capability of the MDPU, but nevertheless the remaining supervisory cost/total cost ratio may be unacceptable to it. On the other hand the big-project approach will certainly undermine and possibly overwhelm attempts by the MDPU to establish a sound annual routine.

Since the preference of the Lending Agency is likely to be decisive, it is incumbent upon it to find some sort of compromise. Certainly a total neglect of the effects of its procedures on the long-term planning capability of the MDPU is wholly unacceptable both from its own point of view and that of the latter.

5. CONCLUSIONS

This chapter has argued that the effective management and planning of the manpower development sector is conditional on (i) the existence of a centralized coordinating agency in the form of an MDPU; (ii) the adoption by it of a continuous-planning process on the lines of the decentralized annual routine described in Section 2; and (iii) the use of cost-effectiveness as the major economic principle for defining tasks within this process. The approach must have these features if the planning of the sector is to be comprehensive, pragmatic and timely.

The international agencies have long recognized that Borrowers' planning capability is in need of improvement, but it would appear that more thought could be given to the question of how this might be achieved. There appears to be an assumption that the improvement will occur of its own accord if the MDPU acquires better qualified staff and if it is encouraged to participate to a greater extent in project generation.

However, this is almost certainly overoptimistic. The shift towards a continuous process approach requires a radical change in the style of the operation of the typical MDPU, and it calls for a similar adjustment in the style of operation of the international agencies.

Accompanying this change of orientation of planning is a need for an amplification of its scope. The functions of the MDPU should be expanded to include the promotion of rational decision-taking within the manpower development sector as well as the giving of direct guidance, and its interests should be widened to cover administration, the flow of information, and the operation of training and labor markets, as well as enrollment determination and the effective use of resources. The international agencies are already moving in this direction but the movement should be faster and more deliberate.

Besides providing direct technical assistance and adapting their own procedures, the international agencies can promote this reorientation in two other important ways. First, they can draw on their own immense experience to provide research assistance to the MDPU staff of member countries. In addition to such obvious topics as the question of where to locate vocational training, they should investigate broad issues like whether the need for active intervention by the MDPU could be reduced by improving flows of information and the operation of training and labour markets. If parts of the manpower development sector can be made self-regulating, the MDPU and the international agencies can concentrate their efforts on the remainder.

Such studies should not be undertaken on an ad hoc basis. The continuous-process approach provides a natural organizing framework. The international agencies should direct their energies toward defining the objectives which may realistically be entertained by the MDPU of a Borrower at a given level of development, and to specifying the individual tasks which constitute the annual routine.

Second, they can do much to accelerate the acceptance of continuous-process through their intercourse, formal and informal, with high-ranking staff in the Borrower administration. At best the reorientation of the typical MDPU will be slow, partly because of innate conservatism, partly because a continuous-process approach is conceptually more taxing than a target-hitting approach, and partly because the MDPU will encounter resistance to change from other agencies within the domestic manpower development sector. The intellectual support of the international agencies will be decisive to the success of the MDPU in making the transition.

With regard to the use of formal analysis in the justification of projects, the policy of the international agencies tends to be both too narrow and too broad. Where formal analysis is applicable, they should rely less on quantitative forecasting and make greater use of other approaches, particularly rate of return analysis. Cost-effectiveness has frequently been strongly advocated, but its application is typically limited to the internal margin, that is, to discovering the most efficient way of achieving a given manpower development objective. Its potential use at the extensive margin, in the form of rate of return analysis, has on the whole been under-exploited. For those projects where no formal analysis is of practical value, the international agencies should cease requiring its presence in project documentation and instead require that a persuasive case be made in other ways.

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III. A PERSPECTIVE ON THE ROLE OF MANPOWER ANALYSIS AND PLANNING IN DEVELOPING COUNTRIES

Robinson G. Hollister

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1. INTRODUCTION

Over the past 20 years I have been involved intermittently with attempts to apply economic analysis to the problems of educational planning. In looking back over these years I am struck by how little progress seems to have been made: the literature on manpower planning seems little different to what what was written two decades ago and, more important, the practice of manpower planning seems hardly to have changed at all.

It is my impression that the plans made by manpower planners have rarely had any effect on the policy decisions actually made. The methods used, however, have had the effect of discouraging the development of information which could have been used to improve the policy making process. In particular, they have led educators in developing countries to expect that manpower planners will give them exact specifications on the number of graduates of various types which they must produce to meet the economic goals of the society; that the manpower planners have a precise method for deriving these requirements; and that the requirements for university graduates, engineers, secondary school graduates, vocationally trained workers, agricultural extension workers, lathe operators, bricklayers and bus drivers can all be derived by the same method and with the same precision.

The creation of these expectations has had deliterious effects not only because no such precise requirements can be, or need be, presented to educators, but also because it has relieved the educators of the feeling of responsibility for finding out how their graduates survive and perform in the labor market, how their configurations of curricula affect the life chances of their graduates, and how the skills they seek to transmit are utilized or not utilized. In sum, educators have felt little responsibility to evaluate

systematically the efficacy of the programs they have created and manpower planning efforts have done little to create an awareness of the need for such efforts. This has emerged not because of bad intentions of manpower planners but because there has been a misallocation of their efforts, with too much attention being devoted to methodology and too little to improving flows of information and to learning from experience.

Consequently, even after two decades of substantial manpower planning efforts in many countries we have precious little information on how labor markets operate in developing countries. Therefore, those interested in using manpower planning to improve the functioning of the educational system should put high priority on efforts to analyze and monitor developments in the labor markets of various countries. Attempts to determine how labor markets in a given country actually work will be far harder work for manpower analysts than making projections of manpower supply and demand but the rewards should be commensurately greater.

2. THE EMERGENCE OF MANPOWER PLANNING

Manpower planning as part of economic development planning received its major impetus in the late 1950s and early 1960s. There are probably two major factors that led to this sudden increase in interest. First, studies of the economic growth of industrialized countries showed that only a small proportion of the growth over long periods of time in those countries could be explained by the increases in the capital stock and the labor force. Some of these studies suggested that improvements in the quality of the labor force, as represented by education levels, was a factor contributing to some of the additional growth. Second, the end of colonial regimes in many areas of the world created the situation in which newly independent countries were

carefully examining the structure of their institutions and planning to move as rapidly as possible to replace colonial skilled expatriate manpower with nationals. The desire to accomplish this replacement at the same time that these countries were planning to accelerate the rate of economic growth, and to modernize and diversify aspects of their economies led to the concern that availability of various types of "critical" manpower could be a problem. Sharp increases in enrollments in primary, secondary and higher education were foreseen as both one of the fruits of independence and as a requisite for sustained and accelerated economic growth.

In the 1950s, the need to attempt to plan systematically the level and distribution of investment over longer periods of time came to be broadly accepted. A central part of the planning methodology was the attempt to project the composition of final demands for various types of output and, through input-output techniques, translate these demands into the implied inter-industry structure of production. In the 1960s, it was increasingly felt that the constraint on development and change might not be so much the availability of capital investment funds as the availability of critical skills to work with the newly created capital structure. It was felt therefore, that the planning of economic change and of educational change ought to be, and could be, carried out systematically and jointly.

In simplest terms, it was the hope, or the expectation, of those advocating manpower planning that the general economic plans for growth could be translated into a set of requirements for "critical" manpower, and, in light of that, plans for educational system development could be shaped to assure that the requirements would be met. Hence, the growth in the skilled labor force would be meshed with the general economic growth and the changing

industrial structure which was necessary to realize that growth. The approach to manpower planning which emerged from this perspective has come to be labeled as the manpower requirements approach.

The contribution of educated manpower to the growth in GNP was also emphasized in the late 1950s, and thereafter, by those who approached the issue by applying the theory of investment in capital to human factors of production. Human capital theorists suggested that the way to plan investment in resources so as to foster faster economic growth was to invest in those activities which showed the highest rate of economic return to the society. Their calculations for developed countries suggested investment in education had high rates of return. The approach to manpower planning which emerged from this perspective has come to be called the rate of return or benefit-cost approach.

There ensued, starting in the mid 1960s, a major controversy, in the economics and manpower planning literature and in international organizations, over the relative strengths and weaknesses of these two somewhat different approaches. This controversy over the two approaches appears to me to have dominated the literature and practice of manpower planning for two decades.

There is sufficient experience with the manpower requirements projections and with rate of return studies to indicate that each has very serious shortcomings as a method of deriving manpower-educational policy guidance. More importantly, the expectation that there would be a single, predominant method for manpower-education planning has proven misguided. While elements of each of the two major methods advocated can be useful in a comprehensive manpower analysis and planning activity, there is a far wider range of tasks and methods which ought to be incorporated. It appears to me

that one reason why this wider range of tasks and methods has been neglected in practice is that discussions of potential manpower planning activities almost always revert, quickly, to a rehash of the two-decade controversy about which of the two methods, manpower requirements or rate of return, is "better".

3. WHY MANPOWER ANALYSIS OR PLANNING?

The central rationale for manpower analysis and planning activities is to seek to avoid "critical surpluses" or "critical shortages" of workers at various levels of skills. Examples of "critical surpluses" include the chronic overproduction of doctors and engineers in India, or the overproduction of advanced degrees in the humanities in the United States in the late 1960s and 1970s. Examples of "critical shortages" include the shortages of aerospace engineers in the United States in the early 1960s, and shortages of geologists in the late 1970s; or the sorts of critical shortages it was feared might emerge in a developing country undertaking a major new industrial activity (e.g. steel fabrication in Zaire and a gas liquefication project in East Malaysia). 1/

In addition to persistent disequilibria in narrowly defined labor markets, one might also include problems of shortage and surplus of the sort which spread broadly across labor markets such as the chronic labor surplus thought to characterize many of the least developed countries or the chronic labor shortages which characterized many European labor markets in the late 1950s and 1960s when large numbers of migrant workers were drawn in.

1/ Economists will warn that I should be much more careful to be precise about defining what I mean by surplus or shortage, but I will forgo that precision in the interest of brevity.

Clearly there are other goals of a society, such as equitable income distribution or improvements in quality of life, toward which manpower planners might hope to contribute, but the most immediate rationale seems to be the simple goal of avoiding critical surpluses and shortages.

With this simple rationale in mind, it seems to me that any effort in manpower planning and analysis must be grounded in some conception of how the labor markets in the given country operate. Any educational plan derived from manpower considerations must be based on some implicit view of how the labor market will operate to allocate the manpower it will educate to various economic functions. For even if an educational plan is in some idealized sense "correct", its presumed economic effects over the long run will not be realized unless the labor market operates to allocate the manpower "appropriately".

Following this argument, in the next section I present a highly stylized description of how labor markets might work. My purpose is not to argue that this description fits every labor market in developing countries but rather simply to give an example of a conception of labor market operations and then suggest how that conception might influence the activities of manpower planners and analysts.

4. A STYLIZED DESCRIPTION OF LABOR MARKETS

For simplicity I divide the description into two parts, the private sector and the public sector, suggest how the labor market might operate in each sector, when "critical shortages" or "critical surpluses" might arise and what might be done about them.

A. The Private Sector

Let us first consider an individual firm in the private sector. Does it do "manpower planning"? In general, the answer is no; it does not generally estimate its future requirements for different sorts of manpower or even its general employment level.

Many studies have been done in which employers are asked to estimate their future employment needs. When the estimates of individual firms about future employment are compared with their actual subsequent experience, the record shows that the employers are not good predictors of their future labor demands. One reason they are not good predictors is that they rarely try. We may speculate as to some of the reasons.

First, there are the uncertainties of the course of economic activity in the industry and what their share of the market will be. Second, they can redefine the work structure for any given level of output by substituting one type of labor for another, or capital and raw materials for labor, or vice versa. A third and most important reason is, of course, that individual employers can in general depend on the ability
to hire from the external labor market different types of labor as they need them; to do so they may have to pay higher wages. 2/

2/ In one sense individual firms do do some manpower planning, to the extent that the organization of the firm defines internal career structures, and to the extent that they have on-the-job training efforts within their organizational structure. But little of this, I believe is based on systematic long term projections.

It seems reasonable to ask: if this is a fair characterization of individual firms' behavior, does this lack of private-sector, firm-level planning create "critical shortages" or "critical surpluses", as suggested above? In general, the answer is no. The reasons are that labor markets evolve over time, relative wages change, supply responds rapidly through job-shifting (and this is the reason that if we follow any individual's career, we see often quite jagged career paths), and through new entrants into the labor market. It is the flexibility of the labor market, the mobility of workers and firms and the responsiveness of both to relative wages, benefits and opportunities which prevent the emergence of "critical shortages" or "critical surpluses".

In the private sector, critical shortages of a persistent sort emerge when there is a sudden and sizeable increase in the total demand for a given skill and there is a long and expensive gestation period in the training for such a skill (e.g., for geologists or aerospace engineers), and there is little opportunity within the technology to substitute other forms of labor or factors of production for that skill group (again, aerospace engineers), and there is no "external" supply source for this particular type of skill (e.g., the gas liquification project in East Malaysia). "Critical surpluses" emerge if there is a sharp decrease in demand and there is little transferability of highly specialized skills to other kinds of economic activities (e.g., in the United States, a sharp decline in the demand for teachers of literature and history).

The labor markets may not work in this flexible way if there are special constraints that arise, for example, because of strictures of caste or other social customs which diminish the mobility of labor or the willingness of firms to utilize certain types of labor.

B. The Public Sector

Though it may not seem so on first consideration, on careful examination, it turns out that in the labor market the public sector operates much like the private sector does. In general, it must compete with the private sector, and even where the government or the public sector is the primary employer in a particular skill market, various sub-units within the government will tend to compete for labor (thereby creating mobility across jobs) and reshape the work structures in response to the relative availability of different types of labor.

There are, however, some major exceptions to this. The first is where the public sector is the principal employer for a skill which has a long gestation period and involves high costs in producing it, for example, teachers, doctors, scientists. A major shift in government activities in these areas could create "shortages" or "surpluses" which would tend to persist.

Second, the government may initiate a major new activity or function which causes a sharp shift in supply or demand for critical skills (for example, the U.S. aerospace program) whose particular market is isolated from supply sources. Similarly, government policy may cause a shift from traditional external sources of supply (such as a decision to cut off the utilization of expatriates, or a major shift in licensing procedures for the medical professions).

Third, the public sector may not have the ability to react flexibly to changing labor market situations, particularly to wage adjustments. This difficulty is exacerbated by the propensity of the public sector to insist on uniform wage scales which prevent it from adjusting relative wages within the

public sector in response to shifts in relative supply and demands in different skill markets. In addition, activities in the public sector may be under less pressure to reduce "inefficient use of manpower".

The most important way in which the public sector may differ from the private, however, is that it often underwrites, or at least controls, the major source of supply for particular skills. It does this through its underwriting or control of educational institutions, through its special regulations on the licensing of certain activities, and through its control on external sources of labor by immigration and emigration policies.

5. KEY ELEMENTS IN A REVISED PERSPECTIVE

Three key elements shape the perspective on the appropriate role for manpower planning; these elements are:

- The conception of how labor markets operate which stresses that criticial shortages and surpluses of trained manpower are for the most part likely to emerge only where the gestation period for training in that skill is long and expensive.
- The fact that in most developing countries 80 to 90 percent of those types of manpower for which gestation periods are long, usually referred to as "highly qualified" manpower, are employed by the public sector.
- The international evidence on attempts to project manpower demand and supply over long periods of time, indicates that they are not likely to be very successful.

From these three elements the following conclusions can be derived:

a. Considering element a, for the most part a country <u>does not have to carry out long-term manpower projections</u> in order to avoid the emergence of sustained "critical shortages" or "critical surpluses".

b. From element c, even if one felt such long-term projections might in some sense be "needed", it is unlikely that they can be done with sufficient predictive accuracy to be useful for policy-making.

c. Finally, for those types of manpower where long gestation periods make projections and planning potentially useful (element a), the fact that they are largely employed in the public sector (element b) indicates that projections which are derived from general economic plans reflecting expected changes in economy-wide economic structure will be not only imprecise (element c) but largely <u>irrelevant</u> since specific public policy and institutions are more significant than general economic structure in determining the configuration of public sector employment.

These considerations indicate that making long-term projections of manpower supply and demand on the basis of general economy-wide planning methods is not likely to be a very fruitful enterprise for a developing country. Unfortunately, in many developing countries this is precisely the activitiy which has taken up most of the time and resources of manpower planning groups.

Perhaps one of the things that made the types of manpower planning proposed in the 1960s so attractive to both planners and policy makers in developing countries was that a <u>single</u> basic method (deriving projections of manpower demands from the central economic plans and comparing them to manpower supplies projected from formal educational institutions and then adjusting to remove imbalances) seemed to many to promise to "do the job" for all levels of manpower and to deal with most manpower problems. As suggested above, time and experience have shown this promise to be empty and the hope

for a single, unified method false. In light of this previous expectation about a single predominant method for manpower planning the proposals for the role and methods which I outline below will appear various, scattered, difficult to implement and, perhaps even ad hoc. Fortunately, in a companion essay in this volume C.R.S. Dougherty attempts to define the kind of organizational framework in which such a range of manpower analysis and planning activities could be implemented. Most of what follows then is an attempt to develop an illustrative list of the range and type of manpower analyses and planning that are consistent with the basic perspective outlined above and which are, in my opinion, likely to generate useful information.

6. AN OUTLINE OF MANPOWER ANALYSIS AND PLANNING

In order to cover a wide range of issues rather briefly, I have organized the issues in a rough two-way cross-classification according to the skill level of manpower (high, middle and low) and the sector of employment (private, public, and education). Table 1 provides an indication of some of the issues within that cross-classification.

B. High Level Manpower

i. The Private Sector

In many developing countries 80 to 90 percent of the higher level manpower is employed in the public sector. Therefore, what the public sector does is going to be significant in determining the extent of "critical surpluses" or "shortages" which emerge for higher level manpower. For most high-skill categories the private sector will be competing at the margin in a market dominated by the public sector. This suggests that in general in this broad category the major issue of concern is relative salary scales in the two sectors. Just how great are the differences in salary (and other benefit) levels between the two sectors and how rapidly do persons in these professions respond to such differentials by shifting sector of employment?

TABLE 1

Manpower Analysis Issues

Level of Manpower	Sector		
	PRIVATE	PUBLIC	EDUCATIONAL
High	Wage scales; use of expatriates.	Separate sub-sector analyses for prof. & tech. Wage scales	Teachers Overseas higher education
Middle	Wages, turnover; training; emigration	Wage structure	Vocational education in science/non-science
Low	Population; labor force; unemployment; rural-urban; immigration-emigration	Agriculture; poverty groups.	
Special	Construction sector; regional studies; computers.		

There are a few higher level manpower groups with a large proportion employed in the private sector (e.g., engineers, accountants and lawyers). The literature on manpower planning is littered with the record of attempts to project and plan for engineer supply and demand and almost all of these of which I am aware have proved clear failures. Several studies have shown that for many types of engineering there is a considerable amount of upward and downward mobility between technicians and engineers as the market tightens and loosens. This suggests there is considerably greater flexibility in the requirements for formal engineer training than has often been assumed.

For those engineering disciplines with more narrow and rigid training requirements one can only suggest more detailed attempts to study the factors which seem to be important in influencing utilization of this type of engineer. One other factor to be considered is that many highly trained professionals such as engineers have professional associations and the numbers of such persons in a given country is likely to be small relative to the population. Use of professional registries may be an important way of gaining more information about how markets for these professionals are operating.

Another topic of importance in some countries is the use of expatriate personnel. Most developing countries have been trying to reduce steadily their use of high-level expatriate manpower. This is a reasonable goal. However, it should also be remembered that high-level expatriate manpower can be used to relieve "critical shortages" and more importantly they can be used intelligently to assure a smooth transition to greater reliance on domestic sources of supply. An attempt to replace expatriates too rapidly can result in the building of training capacity which is too large relative to the long-term flow of graduates which can be sustained e.g. in attempting to replace expatriate engineers rapidly the engineering faculty is built up to a size that will produce a flow of graduates which is two or three times the flow of graduates which could be absorbed in the labor market over the long run. Using expatriate manpower intelligently could allow for a slow build up of the stock of domestic sources to an appropriate, sustainable long-term capacity.

ii. <u>The Public Sector</u>

As the predominant employer of most professional and technical workers, it would seem that the public sector could contribute a great deal

toward improved understanding of the operations of labor markets for high-level manpower by maintaining systematic, comparable data on the members of its work force (e.g., education, training, work history) and rates of pay for various types of workers, and making these data available to manpower analysts.

If such data are to be really useful, it is important they be made available on a micro basis, not aggregated across individuals. In some countries such data may already have been gathered and been made accessible. If a government is really going to press for better analysis of high level manpower problems, it would seem reasonable for it to try to meet this very minimal requirement of getting its own employment data base in shape.

Rather than trying to suggest specific pieces of analysis which might be undertaken for high-level manpower in the public sector I want to suggest a process through which such analyses might be developed. This approach is taken since there is no uniform method applicable across the entire public sector and the procedure should be to shape the analysis to the character of the manpower problems in each sub-sector: the analysis should proceed ministry by ministry. The character of the problems and the appropriate methods for analyzing them will vary substantially from one sub-sector to another. For example, the methods for analyzing supply and demand situations with regard to doctors and nurses will necessarily be quite different from those which would be called for in analyzing the high level manpower situation in public works regarding, for example, the availability of engineers and engineering technicians. Manpower analysis in the health sector will be concerned with demographic factors, the geographical dispersion of health facilities, the interplay between private

and public health facilities, and the flow of health professionals into and out of the country. In contrast, in public works, government plans for growth in public facilities, transportation structure, water, and other utilities will be important. Appropriate staffing for maintenance will also be a factor. For these reasons, it seems inevitable that an effort must be made to help each sub-sector to develop manpower analysis procedures shaped to the particular nature of their problems.

It should be said, however, that in all cases it is important not simply to concentrate on trying to estimate future supply and demand. Since the major problems may arise from how the incentives in the profession are structured, analysis of this aspect of the labor market is more important than making projections. With respect to the incentive structure, the problems of the public sector in determining wage and benefit levels can be of great importance. The propensity of governments to set wage scales uniformly across fields of specialization (often related only to the level of educational attainment) handicaps the public sector in competing with the private sector for skilled manpower. Likewise, the relative earnings and benefits of the secondary or technician level of professional manpower compared to that of the highest level of manpower is often a problem. A common complaint in many countries is that neither the public nor private sector is able to recruit and hold sufficient second level professional manpower, because the disparity in earnings is so great that there are strong incentives for second level technicians to attempt to reach the qualifications which will carry them into the higher wage scales.

Effective manpower information and analyses from each sub-sector will not be obtained simply by sending out a request or a requirement that certain numbers be provided. Agencies need help in determining how to

shape the manpower analysis to their problems; how to do the analysis; what information they need and what information they should provide; specifically what information should flow upward in the government organization and in what form.

While suggesting this general process for developing manpower analysis in the public sector, agriculture is an area which, I believe, in most developing countries deserves special attention. The structure of agriculture can vary very sharply from country to country and therefore the kinds of high level manpower - research scientists, technicians, extension workers, marketing specialists, agricultural engineers - can be quite different from one country to the next. For example, some countries have large proportions of their agricultural output in tree crops, e.g., rubber, cocoa, coffee, while others are primarily dependent on grain production. Their needs for high level skills will surely be quite different and detailed manpower analysis will be necessary to shape plans to these crop specific differences.

iii. The Education Sector

In virtually all developing countries primary and secondary education teachers account for over 50 percent of all professional and technical workers. Manpower analysis in the education sector at the high level must be focused on the circumstances of this group. The methods for analysing the determinants of teacher supply and demand are relatively well-developed and straightforward, at least as they apply to the quantitative side of the analysis.

If we look at the education sector not just as a utilizer of high level manpower but also as a supplier, then, the issues to be addressed become much wider. It is perhaps in this area that the greatest

expectations have arisen with regard to the ability of manpower planners to tell educators how many of various types of high level manpower they should produce. As has already been emphasized, it is very important to make clear to educators that this is for the most part a false hope.

It was stated at the outset of this paper that educators need to feel, and take, responsibility for finding out, in a systematic way, what happens to the graduates from their programs when they enter the labor market. The most important step that can be taken in regard to production of high level manpower is to improve information about how the graduates of post-secondary institutions are currently absorbed into the labor market. This can be partially done through analysis of large scale national survey data, such as the labor force survey and the census. But where very particular information is sought for narrowly defined types of training, the method that holds the greatest promise is the tracer study.

In a tracer study, attempts are made to obtain a sample of recent graduates of an institution and find out about their experiences in the labor market over time. This can be done in either of two ways. From records, graduates of an institution over, say, the previous five years can be identified, contacted and interviewed about their working experience from the time of graduation to the time of interview. Alternatively, the sample members to be studied can be selected as they graduate from the institution and then reinterviewed periodically thereafter. There are different strengths and weaknesses of each method which I need not go into here. Tracer studies are of most use, of course, when comparisons can be made concerning the labor market experience of the graduates of various sorts of institutions or between the graduates of a given institution and

a "control group" of individuals who received no formal tertiary education. The most important features of the tracer study method are that they closely link the individual to the institution in which training was received - and therefore make it possible to provide more precise information on their training and associated costs - and that tracing their experience over time in the labor market results in a more dynamic picture of the operations of the market. 3/

In many countries in Asia and Africa, widescale unemployment amongst graduates of post-secondary institutions has been a concern. Tracer studies are particularly helpful in analyzing this sort of issue. Key questions are: how long does it take graduates to find their first job; when they find jobs, what are their earnings levels; how fast do their earnings rise and how often do they change jobs? Those who take longer to find jobs may, in fact, search out better ones and end up with higher rates of pay. Thus, the view of the social costs of unemployment can vary according to the details of the long term experience of the individuals.

I have already suggested that tracer studies are most powerful when comparisons can be made as between alternative types of training. This can be extended more generally in the education sector to suggest that more cost-benefit analyses of alternative programs be undertaken.

In some countries very large numbers of students seek post-secondary training overseas. Often there is very poor information regarding, what type

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3/ Another argument in favor of tracer studies is that they will yield data which may more closely approximate marginal benefits and costs. A common complaint about most benefit-cost or rate of return studies is that the data reflect average rather than marginal benefits and costs.

of studies they are pursuing, what proportion of them return to the country and what proportion re-emigrate. For some countries the proportion of students trained overseas is so large that changes in overseas education and training policies could be as important to the supply and demand of high level manpower in the country as developments in the post-secondary institutions within the country.

B. Middle Level Manpower

i. The Private Sector

For middle level manpower in general, the training period is not extremely long and, therefore, critical shortages are not likely to persist unless there are inappropriate signals or institutional constraints on the operations of the labor market. The major need then, with regard to this level of manpower in the private sector is to improve understanding about the operations of the labor market at this level, particularly with respect to wages, rates of turnover, and vacancies. In most countries data on these dimensions of the labor market are fragmentary and have been gathered in uncoordinated ways, if at all. What would be most valuable is continuous time series data collected on a comparable basis covering the various industrial sectors of the economy. This kind of data allows continuous monitoring of the development of the labor market and provides better indications of those parts of the market where shortages or surpluses may be emerging.

A recently developed survey in Malaysia, the Employment Turnover Survey, is an extremely promising and sophisticated example of an instrument which can be used to obtain insights regarding the workings of the labor market at the middle level of manpower and below. This survey gathers systematic data on quits, hires, and promotions at various skill levels for a

sample of firms in various industries and regions in the country. As this is a new survey, there is relatively little to report yet on its findings but as repeated samples are developed and analyzed, it will be possible to get a far clearer picture of the dynamics of the labor market in that country.

Training of middle level manpower is a subject which has received a fair amount of discussion in a number of countries. While there has been a good deal of discussion there has been relatively little quantitative analysis. This is not surprising, because it is extremely difficult to measure the extent of training which goes on outside of formal educational institutions. The boundaries between courses, on-the-job training, and actual work processes are very difficult to determine.

Perhaps as a result of this, greater reliance has been placed upon statements of employers about the adequacy of the training their labor force receives. Invariably, it is reported that the training is inadequate. This response seems invariant with the level of development or of the sophistication of the labor force of their firm. These responses by employers are inevitably followed by arguments for the importance of tax incentives or subsidies to enhance training in particular parts of the private sector. Suggestions for such schemes have been made in several countries, but analyses of their effectiveness have been very few. In light of this, I have a fair amount of skepticism about formalized government intervention in the area of training in the private sector. Certainly, before attempting to implement such schemes, efforts should be made to gather information about experiences other countries have had with such schemes, both the failures and the successes. It is important that evaluations of these policies should be based on measures of <u>actual outcomes</u>, not simply on "expert opinions".

A third issue that is potentially of some importance for middle level manpower in the private sector is immigration and emigration. In recent years, it appears that many countries in Asia have had substantial outflows of middle level manpower to countries in the Middle East. The flows of remittances sent by such workers back to their home country can provide important balance of payments contributions (e.g., in the past for several Mediterranean countries and currently for Egypt, Pakistan, Philippines and Sri Lanka). However, the fact that these flows tend to be pro-cyclical, i.e., workers leave their home country as the world economic activity increases and return home during world recessions, exacerbates the problems of the home country by, on the one hand, making middle level workers scarce during periods when the situation is favorable for the country's exports and the economic base could be built upon and, on the other hand, creating a surplus of middle level workers when recession already makes it difficult to maintain domestic employment and economic growth. As already mentioned with respect to overseas factors affecting high level manpower, this phenomenon could upset even the most carefully developed plans for middle level manpower development. More analysis is needed to develop alternative, sensible policies which might moderate the impact of these sorts of developments.

ii. The Public Sector

In most countries, the problem at the middle level of manpower in the public sector seems to be the development of appropriate relative wages (both with regard to the private sector and with regard to the upper levels of the public sector) and the development of appropriate career structures. As with higher level technicians, the often-heard complaint is that the incentives for middle level manpower to attempt to gain paper qualifications that will carry

them into the higher levels of the wage structure are inordinately high. A recent report on Brazil, for example, suggested that overproduction of engineers and underproduction of industrial technicians was occurring because of a bias in preferences toward higher level qualifications.

Again, as with the professional-level manpower in the public sector, the problem of uniform scales undifferentiated as to specialized functions seems to arise in a number of cases and may exacerbate the problems of developing appropriate incentive structures for middle level manpower of various sorts. The most important step in trying to get some insight regarding the extent of these problems would be, once again, for the public sector to attempt to systematize its personnel records regarding characteristics of its employees at each level and their rates of pay and benefits. Such data would provide a much better picture than has been available to date in most countries of the public sector's sources and uses of middle level manpower. To date the degree to which the types of problems just discussed arise, and their causes, are judged almost solely on very partial and anecdotal evidence.

iii. The Education Sector

In many countries there has been increasing concern about the appearance of increasing unemployment among those with some secondary education. However, in some cases, analysis has show that what appeared to be persistant unemployment problems among secondary school leavers were more problems of dynamic adjustment as they entered the labor force rather than long term, persistant unemployment. 4/ As suggested above, tracer studies can be important instruments for gaining insights regarding these dynamic adjustments of new labor market entrants.

4/ See, for example, Blaug [1974], for a discussion of this issue.

In the education sector, an important issue with regard to middle level manpower appears to be: what is the appropriate role for formal, vocational education? In every developing country with which I am acquainted, either directly or through the literature, there has at some time in the last two decades been a major push to increase vocational education at the secondary level. This push has almost always been based upon: a) the statements by employers regarding the adequacy of the training of their labor force of the sort already referred to above, and b) the general observation that most of those who pass beyond the primary level do not go on to further education but enter either agriculture, rural enterprises or the urban service and industrial sector. It is presumed, by those advocating vocational education, that formal educational training which is related more directly to these activities will ease the transition from school to work and perhaps enhance productivity. There are startingly few studies which attempt to estimate the actual effectiveness of vocational education in a formal setting.

In some cases, the ineffectiveness of the vocational education program has been judged by the fact that it has proved difficult to fill the available places in the programs. Others have suggested that the effectiveness of the program should be judged by the proportion of the graduates who actually end up in jobs for which they were trained. Both of these methods may be misleading.

With regard to unfilled places, the failure of a program to attract students can occur for a whole host of reasons. For example, one study showed that while the training for agricultural technical workers was probably valuable, the students were aware that the government wage scales for those kinds of workers were not sufficiently high to warrant the time and expense of

completing the course. Similarly, judging success by the percent ending up in specified jobs is risky. There is no reason to expect that 100 percent of the graduates of any training program should end up in the occupations for which they were trained. (In fact, in the stylized view of the labor market sketched out above it was the flexibility and response of workers and firms and the mobility across firms in response to different opportunities which, it was argued, reduced the likelihood that critical shortages or surpluses would emerge and persist).

For these reasons, the appropriate methods for analyzing vocational education are, once again, tracer studies and cost-benefit analyses. The tracer studies will permit comparisons of the subsequent labor market experience of those with and without vocational education or of those with various types of vocational education. Using the information from the tracer studies, in the context of a cost-benefit analysis, it could emerge, for example, that as little as 40 percent of the graduates of a vocational program actually enter the trade for which they were trained, but that the increased productivity and earnings of this 40 percent more than justify the higher costs of the educational training. On the other hand, though 80 percent of the graduates might end up in the trade for which they are trained, it may turn out in the cost-benefit framework that the higher costs associated with the facilities and equipment or the expensive instructors in such programs more than outweight the additional social benefits which the graduates of the program generate.

A second issue at the middle level of manpower is related to the distribution of secondary education between science and non-science courses. It appears to be the feeling in many countries that there is insufficient science training at the secondary level. This judgement may be correct, but

in many cases the basis for it is not made clear. One argument that has been put forward, for example in the United States, is that the proportion of graduates from higher education in sciences as opposed to the non-sciences is completely determined by the choice of science and non-science made at the secondary level. That is, there is very little switching from non-science to science emphasis during the course of post-secondary education. If this is correct, it would suggest that the ability of the society to respond to changes in the relative requirements for science versus non-science manpower would be extremely limited and that study of factors which influence the choice between science and non-science pursuits at the secondary level would be of great importance.

Another basis upon which the argument for encouraging or even forcing more students into science curricula is sometimes made is complaints from employers that the secondary school-leavers applying to their firms have an inadequate basis in science. It would seem that analysis of the subsequent labor market experience of school-leavers with high levels of science training as compared to those with lower levels of science training and of the factors that seem to influence the choice of students between science and non-science training would help to improve understanding and decision-making in this area.

C. Low Level Manpower

i. The Private Sector

Extensive analyses of broad issues concerning the labor market and employment form the foundation for sound manpower analysis and planning and I have chosen to place these types of studies in this category.

The most fundamental information for manpower analysis is, of course, the characteristics of the population. The emphasis on population programs in the last two decades has fostered extensive analyses of the determinants of

demographic changes. Methods for projecting demographic change have been well developed and made readily available to most developing countries through various international and national agencies. For the major features of the working age population with which most manpower analysis will be concerned it is my opinion that quite reliable information can be developed and maintained using methods readily available and with relatively little time and effort.

After the size and general characteristics of the working age population the next question is the size of the labor force. The critical issue here, at present, appears to be the determinants of the labor force participation rate for females and how these are likely to change over time. In many countries there has been relatively little study of this issue.

For some countries, there have been sizeable year to year fluctuations in the labor force participation rate in rural areas, at least according to available survey data. While in many developing countries it appears that labor surplus rather than labor shortage is the problem some countries appear to be reaching the point where labor shortages, at least in certain regions, in the agricultural sector could become a problem. The long term viability of certain types of agriculture may depend critically on the size of the available rural labor force and therefore analysis of factors affecting labor force participation rates can be important.

A careful monitoring of the rate and character of open unemployment is also critical for understanding the dynamics of the labor market in any country. The phenomenon of underemployment is far more difficult both to measure and to understand. It is obviously more important in rural areas where open unemployment is less likely to emerge. Looking at how the structure of hours worked and part-time work have evolved over time in the country should be part of any effort to analyze under-employment.

Issues of rural-urban migration have been the subject of a great deal of discussion. While in a few countries careful surveys and analyses have been done to improve understanding of migration, in many countries analysis has been limited to data drawn from the decenial census. This is a topic of high priority for manpower analysis. A proper understanding of rural-urban migration in the past and its implications for the future requires in most cases a specially designed national sample survey. This is because it is desirable to determine not only the extent of rural-urban migration, but also the circumstances in which such decisions were made and the results of movements from one area to another.

Not only is internal migration of some importance, so also is international migration. Its potential importance for high and middle level manpower has already been stressed. Flows of refugees and migrants can present sizeable problems for some countries and have implications for education, training and employment that deserve careful attention.

The emphasis on issues of income inequality, poverty and basic needs in the past decade has led to a greater focus on particular poor subgroups of the population, e.g. in the urban sector, squatters and hawkers, in the rural sector, small single crop farmers, landless agricultural laborer groups, fishermen. Formulation of government policies to improve the economic circumstances of these groups requires special studies of the factors which limit their economic opportunities and continued monitoring to evaluate the effectiveness of such efforts. Formal education and training may be part of such policies but what role they might play needs to be determined by analyses of their current circumstances. For example, one study of single crop padi farmers in Malaysia, a particular poor segment of the population, showed that

they were already earning 40 percent of their income outside of agriculture. A training program aimed at improving their productivity as padi farmers might well be less effective than one designed to improve their earnings from non-agricultural activities.

ii. The Public Sector

As noted for the public sector at the other levels of manpower, it is important to try to ensure that information concerning major new governmentally sponsored initiatives which may affect the demand for particular types of manpower even at the lowest skill levels is systematically gathered and made available. For example, changes in government policy with regard to the opening of new land settlements can have sizeable impacts on particular rural labor markets, as can the development of new irrigation schemes or major changes in the transportation network.

More generally, it would appear that while most of agriculture is in the private sector, it is the public sector which can best attempt to take a comprehensive and systematic look at the evolution of supply and demand for manpower within it.

D. Special Studies

The manpower issues listed above by sector and by level of manpower are, I believe, the ones which deserve and require continuous analysis and monitoring. There are, however, in addition, some special topics which may require only one-time special manpower analysis efforts. Some of these are listed below.

i. The Construction Industry

In many countries the construction sector appears periodically to be a key bottleneck. In a number of countries problems with this sector have become particularly heightened because of the flow of middle level